

HARRY GOVIER SEELEY  
[1839-1909]

# HARRY GOVIER SEELEY AND THE KARROO REPTILES

BY  
WILLIAM ELGIN SWINTON

*Pp. 1-39 ; Frontispiece ; 5 Text-figures*

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# HARRY GOVIER SEELEY AND THE KARROO REPTILES

By W. E. SWINTON

HARRY GOVIER SEELEY was born in London on 18th February, 1839. He was the second son of Richard Hovill Seeley, a goldsmith, by Richard's second wife, Mary Govier, who was of Huguenot descent.

Richard was a son of Leonard Benton Seeley, a London publisher and a philanthropist, so that the young Seeley was born into a family where scholarship, a love of books and of fine art were appreciated. His cousin was Sir John Richard Seeley (1834-95) a distinguished historian and essayist.

As a boy he was greatly influenced by lectures. They stimulated his curiosity and directed his reading, and the times were rich in scientific orators. Sir Richard Owen, Edward Forbes, Sir Andrew Ramsay and W. E. Brayley were among his mentors. A course of lectures by Brayley, on Terrestrial Magnetism, first awakened his interest in Geology and the pages of Lyell's *Principles of Geology* became his first hunting ground. While apprenticed to his uncle, John Seeley, who was a conveyancing barrister, he became very interested in comparative osteology, preparing the skeletons of birds and small animals and even fish, noting the differences of articulation of the bones.

Soon he discovered the wealth of materials available for study in the Natural History Departments of the British Museum and he found a friend there in S. P. Woodward who was for seventeen years (1848-65) an assistant in the Department of Geology.

Many of the lectures he attended (especially those of J. Forbes Ramsay) were at the Royal School of Mines, and these led him, when he was about twenty years of age, to enter Sidney Sussex College, Cambridge, in search of wider knowledge.

There is no record of his studies there, indeed he may well have been a dilettante and he certainly never took a degree. Nevertheless his keen interest in the natural sciences attracted Professor Adam Sedgwick's attention and in 1859 he was appointed museum assistant to the Professor.

There is little doubt that at first his tasks were menial; cleaning, tidying and arranging the rocks and fossils in the Woodwardian Museum. But the wealth of material awaiting attention was an incentive to the bright young student who tried hard to understand the nature and the provenance of the things in front of him. Soon Sedgwick could report that Seeley "could not only be trusted to arrange specimens in the Museum but could occasionally take his place in the lecture-room".

Until 1873, when Adam Sedgwick died, Seeley was assistant, deputy and amanuensis, all in one, in both class-room and museum. Yet frequently he was heard in his own right, as when he gave courses of popular lectures to young people (see Text-fig. 1). It is easy to see that in this congenial atmosphere the young man developed in several directions. He became skilled in handling specimens and appreciative of the need for full documentation of their occurrence and history; he



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FIG. 1

grew instinctively to recognize differences between fragmentary fossils ; he learned the lessons of ecology, that the fossil is only part of a greater whole that can yet be rediscovered ; and that all these matters were capable of being interpreted and transmitted in comparatively simple form to audiences that often became enthusiastic. The experience in the lecture rooms of Cambridge was to fortify him in a career in which the spoken word was a serious rival to the written one, and Seeley was a prolific writer.

That he had personal problems to conquer seems clear. Though some have remembered his lectures as engagingly simple and original, others, notably H. B. Woodward, have recorded his style as dry and monotonous. Indeed, his single-handed life in the museum for nearly twelve years might seem to have engendered such a style. Yet this was not so and the acute attention he gave to his tasks seems to have increased the liveliness of his mind and prompted him to ingenuity in method and expression. It did much more than that too, for it led him, as a magnet draws the needle, into the field in which he was to make so many fundamental discoveries.

The Woodwardian Museum collections were especially rich in material that had been obtained from the "coprolite pits" of the Cambridge Greensand. These pits had been extensively worked for the phosphate which was derived from the nodules but the diggings revealed a considerable fauna, no doubt derived from the Upper Gault by erosion. Many of these fossils were phosphatized and while there are numerous Invertebrates represented, the Vertebrates form a remarkable series, particularly of reptiles of sea, land and air. One bird, *Enaliosaurus*, is also known. Today the best exposure of the Cambridge Greensand is at Barrington, 6 miles SW. of Cambridge, though fossils are scarce in it.

It was this series that particularly appealed to Seeley. The specimens were intriguing, their nature was virtually unknown and the fauna unpublished.

To this task the young curator applied himself with vigour and in 1869 there appeared, printed at the University Press, *Index to the Fossil Remains of Aves, Ornithosauria and Reptilia from the Secondary System of Strata arranged in the Woodwardian Museum of The University of Cambridge* by Harry Govier Seeley.

The volume has an appreciative preface by Professor Adam Sedgwick, still Woodwardian Professor of Geology after fifty-two years. Sedgwick in fact justifies his retention of office "despite infirmity of sight and feebleness of health" by the excellent work of his "friend and assistant". This preface is historically valuable. It details the circumstances in which many of the Museum's treasures were obtained and shows a width of collection. He had an assistant, Mr. Henry Keeping, later well known as a collector, and the start in excavation and collecting that Seeley made in and around the phosphate diggings was energetically maintained and extended by Keeping. Seeley was thus left in greater peace to concentrate upon his researches. This *Index* is tribute to both museum work and research. Ornithosauria (now known as Pterosauria and which are reptiles); Aves; Dinosauria; Dicynodontia (from South Africa); Ichthyosauria; Crocodilia; Plesiosauria; Chelonia; and Lacerilia are the main headings. Among them Seeley was responsible for the naming of nine new genera and eighty-five new species. The work itself is meticulous. The young seeker for knowledge was now a fit member of a generation in which palaeontological discovery was accelerating and during which it tended to outrun nomenclatural appreciation.

The *Index* was followed, in 1870, by a review of the flying reptiles so abundantly available in the Museum. This too bore the imprint of the Cambridge University Press and was titled *Ornithosauria*. In this work, which is still a standard book of

reference for the Cambridge Pterodactyl fauna, Seeley substantiated many of the names first published in the *Index*.

His days in Cambridge were, however, coming to an end. Adam Sedgwick was at long last about to relinquish his chair through death, and whether Seeley feared the prospects under his successor or was already straining at the restrictions of a collection very well known to him cannot now be said. At any rate he gave up his Assistantship in the Museum and came to London in 1872. J. E. Gray had recently invited him to join the Zoology Department of the British Museum and T. H. Huxley offered to recommend him for the Geological Survey, but he refused both.

The next few years saw him engaged in a fury of writing and literary work. No longer the scientific sponge accumulating the wisdom of others, or the museum hack learning by slow experience, he seems to have determined that the reservoir of his knowledge should be placed at the disposal of others.

The time was fruitful along three lines. Firstly, in 1872, he married. His bride was Eleonora Jane, the only daughter of William Mitchell, of St. George's Lodge, Bath.

The family of the marriage consists of four daughters, all still alive. The eldest is Maud, who married Arthur Smith Woodward, for many years Keeper of the Department of Geology in the British Museum (Natural History) and who was a distinguished Vertebrate Palaeontologist. He retired in 1924 and was knighted in that year.

In the year following the birth of Maud another daughter was born, Brynhilda, later known as Belinda. She took up art and her reconstructions and drawings of the flying reptiles, made to scale from careful measurements of the bones, are among the illustrations of *Dragons of the Air*.

Several years later a third daughter was born, Phyllis, whose interests in Geology enabled her to lecture for her father on occasions, and she was for a short time his assistant at Queen's College, Harley Street, London.

In 1883 the family left London for Sevenoaks where in the following year they were joined by a fourth daughter, Sylvia. She became scientific secretary to the late Dr. H. M. Ami, who founded the Canadian School of Prehistory in Ottawa, and for five successive summer seasons carried on excavations on the world-famous site at Les Eyzies in the Dordogne. Sylvia is now on the staff of the *Journal of the Royal Canadian Geographical Society* for whom she compiled the *Mirror of Canada*.

Each of these daughters has inherited in some degree some aspect of the ability of their father. All of them remember vividly the instruction they gained from him. The colour of the sky, the nature of the tides, the formation of sand, the constitution of rocks, and the erosive forces seen in every day life were all subjects on which, inevitably, he enlightened them. It is clear that all his life Seeley was the born teacher and he was fortunate in being able to attract so many born pupils.

The family home at this time was first in Sevenoaks and later in Kensington, and secure in the comfort of this, surrounded by love and devotion, he was able to produce a remarkable amount of work. This second aspect of these first London years saw the publication of many important books and names for fossils.



He was appointed to lecture for the Gilchrist Trust and for many years he lectured in most of the principal towns in England and Wales, once or twice in Scotland and Ireland. He, and Sir Robert Ball, the astronomer, were two of the most popular of the Gilchrist lecturers. Seeley's delivery was excellent and clear, whether he was speaking in a class-room or to an audience of 3,000 in some of the northern towns. On these tours he became very interested in the various British industries and he delighted to tell his children how some of the many things that he had seen were made.

In the early days of his lecturing he used scale diagrams, many of them drawn and coloured by Mrs. Seeley from text-books. Then came the use of a lantern and slides and soon after, the dissolving views. In lecturing on extinct types of life he continued to use diagrams on which he outlined the principal features in french charcoal bringing the bones into high relief.

With his widespread interest in education he came into contact with Miss Cons and Miss Martineau, who were running the College for working men in the Morley Memorial Hall, in what is now known as the Old Vic. Emma Cons's niece, Lilian Bayliss, who assisted her, arranged for variety turns to follow the scientific lectures which were given once a week by various scientific friends of Miss Cons. Miss Bayliss was not satisfied with variety but planned to bring Shakespeare to the Old Vic, and this desire she lived to see amply fulfilled.

Seeley was for many years a regular contributor to *The Educational Times*.

He was a leading authority on Dinosaurs and was responsible for the names Saurischia and Ornithischia by which the two main groups are now known. He made researches on marine reptiles and founded the genera *Ophthalmosaurus*, *Muraenosaurus* and *Cryptocleidus*. Pterosaurs still continued to fascinate him and he made further researches upon their anatomy.

His energies were even greater than needed for these studies and writings. In 1884 he completely revised (and almost rewrote) Phillips' *Manual of Geology*. In 1886 he produced *The Freshwater Fishes of Europe* and in 1887 he wrote *Factors in Life* for the S.P.C.K. and began the great series of papers in the *Philosophical Transactions of the Royal Society* sometimes classed together as *Fossil Reptilia*, 1887. The third facet of these years was the preparation that they gave him for more permanent and influential employment. His talents were widely displayed and it soon became obvious to many in the academic world that here was a man worthy of their mettle who was fitted to share the professorial benches with them.

In 1896, Seeley was appointed Professor of Geography in King's College, London. If at first it seems that his studentship in the law and his assistantship among Cambridge fossils formed a strange prelude to this Chair, experience soon proved him to have a new approach to the subject and a considerable appeal to the students. He explained Geography to his hearers much as afterwards he explained natural events to his growing children. He analysed the subject, dealt succinctly and simply with each aspect and reassembled the whole in a logical and instructive manner. By starting his course with geomorphology he at once formed a logical basis for his science and set a pattern for his successors.

Soon his geography class became well known and he was called to be Professor

of Geography and Geology (whilst still holding his King's College appointment) at Queen's College in Harley Street, London.

His long voluntary experience in popularizing now stood him in good stead, as generations of his students have testified. He had also a capacity for hard work. Three simultaneous chairs did not sap his energies; rather they increased his opportunities.

In 1881 he was Dean of Queen's College. Ten years later, still busy in his professional duties, he was still looking for fresh fields of teaching endeavour and in 1890 he had become Lecturer in Geology and Mineralogy in the Royal Indian Engineering College at Coopers Hill, succeeding Martin Duncan as professor in the following year, a post he held until the College was closed in 1906.

Even so he was still carrying on a vigorous public lecturing programme between 1880 and 1890. In 1885 he founded the London Geological Field Class of which he remained the Lecturer and Leader for twenty-one years. In 1891 he produced a most useful *Handbook of the Geology of London*, primarily for this group.

In 1896 he succeeded Thomas Wiltshire as Professor of Geology and Mineralogy in King's College, thus joining this Chair to that he already held of Geography. This remarkable duality was his until his last few months in 1908.

Yet this narrative of his academic record and duties, speaking as it does of endless preparations, meetings, lectures, demonstrations and field classes, conceals one of his great achievements and the beginning of a new phase and interest in museums and universities in Britain.

If we turn back the clock and look again at that *Index* he produced on Woodwardian fossils, we can read on p. 136 the following few lines:

... "Fossils from the Alexander River, South Africa.  
 1 cast of skull of *Dicynodon lacerticeps* (Owen)  
 2 cast of skull of *Dicynodon testudiceps* (Owen)  
 3 cast of skull of *Dicynodon strigiceps* (Owen)" ...

These were but casts and of forms that had already been fully described by Richard Owen in 1844, 1845, and 1855 respectively under the names given in the *Index*. (The author's name should not therefore be in brackets.) All the type specimens were then in the British Museum at Bloomsbury and are now at South Kensington.

It is unlikely that the casts themselves stimulated Seeley to explore the wider fields of the Karroo but during his tenure of multiple professorships, he must have become aware of the growing tide of material that was being unearthed in South Africa and which bore witness to a vast new fauna.

Most of the specimens were being discovered accidentally by farmers turning over their soil or observing the materials washed out in dongas (or gullies). It must have become increasingly obvious that a determined collector could obtain large and related series and, knowing the stratigraphical and osteological environment, could contribute to a more satisfactory understanding of the whole.

It was precisely this that Seeley determined to do, with of course the general picture of geology and geography in his mind. He prepared a scheme which found official

favour with the Royal Society's Government Grant Committee so that he was enabled by a grant of £200 to visit the reptilian fossils in St. Petersburg and Moscow and then to proceed to Cape Colony to make his own observations and collections.

Fortunately, through the care and kindness of his family, the series of characteristic letters that he wrote from Africa is preserved. With the exception of a few paragraphs of family interest these are printed here for the first time. They constitute a unique record both historically and geologically and throw valuable light on some of the fundamental fossils in the story of reptilian and mammalian evolution, besides shedding some interesting side-lights on the South Africa of that time.

The spelling and punctuation have been left as they are in the originals, but the numerous geographical and geological sketches with which the letters were peppered have had to be omitted, except those of actual fossils.

POSTE RESTANTE

(CLARIDGES HOTEL,) CAPETOWN,

26 July 1889

My darling wife,

I was very glad to get your letter, and Mauds and to hear all your news. I got it this Friday evening after spending the afternoon with Dr. Gill at the Observatory. I find that his is an admiralty appointment so that he is quite independent of the Parliament, and he is evidently a very able man. He told me that he had always been of a mechanical turn making clocks as a boy and using his hands, and narrated that dining once with Huggins he met Naysmith, and that they travelled together in an omnibus, when Naysmith got out, and at their journeys end the 'bus man demanded payment for Naysmith. Next morning Gill got a letter from Naysmith stating that he had placed £1000 to his credit for astronomical apparatus. And on calling to thank him and ask to what he owed this singular liberality, Naysmith replied, "to your thumbs sir; for I felt sure that a man with such thumbs would be able to use the money to good account for the purpose which I intend." The Gills are delightful people, and I spend next Sunday afternoon there. I met there Dr. Elbers, secretary of the Berlin Academy, Captain Pullen who is going to survey the west coast, and after lunch a number of ladies and gentlemen who called. Dr. Atherstone told a capital story of Sir John Hershell who had been unable to get any potatoes out of his garden, on account of the Depredations of the Blue Mole, which is a large animal like a rabbit. So Sir John determined to try, and eat the moles. It happened that day, that they had had a present of a leveret, and Lady Hershell ordered that to be served at a separate table for herself. So Sir John and W Maclean sat down and cut daintily, and presently the saliva began to appear at the corners of Maclean's mouth, and Sir John pressing his abdomen said I feel uncomfortable MacLean; we had better have the mole taken away at which Lady Hershell derided them. So they rang the bell, and asked the coloured servant to take away the mole, when he went to Lady Hershells table and lifted the dish. Not that, you rascal, said Sir John; I said take away the mole! But *this* is the mole, said the boy.—I have heard Sedgwick tell the same story, so I have no doubt it is genuine.



The observatory is magnificent and they are building a special house for photography. We saw all the apparatus.

The Dutch boors have a great sense of humour, and over dinner tonight W de Smit told some funny stories. Thus a farmer was drowned, and on it being told to his son, the son says "O dear, and he had my new pen knife in his pocket". The Dr. relates that a Hottentot was going to be hanged at Grahamstown while he was surgeon to the convicts, and on being asked his last wishes desired a new pair of white trousers because a good many women who knew him would come. Further asked if he had no other wish he said a pipe of tobacco; this the jailor handed him while the priest was praying, when the man handed it back saying jailor you have forgotten to light it. Presently the pipe had to be thrown down. But it happened that the rope broke, when the man picking himself up said, what a nuisance it is, it has put the pipe out! I hear that up country coffins are a commodity in great demand, and Atherstone mentioned that one man had made many coffins and bitterly complained that all his friends had borrowed them. Now, he added I have made a teak coffin, and you don't catch me lending that to anyone! Delirium Tremens seems to be a common ailment among the Dutch and others, and de Smit told how people systematically give directions for their recovery, and then drink till they become insane. On one occasion he found the Commissioner, Assistant Commissioner, and Doctor of an up country district all in this state; and on another occasion the Dutch farmers wife become pious with drink was praying half the night that the almighty would not be very hard on her, for she had not occasion to come to him often, and it was not often that she kicked over the traces, and as only a thin partition separated the rooms Smit could not get to sleep. Dr. Atherstone mentioned that in his earlier practise a girl had fallen down a well in process of construction and dashed her brains out and that he recovered her happening to be passing as a plumber brought her to the surface, and said that the bones were entirely destroyed, but that eventually new bone grew, and that she is now married in England, and is a well known musical composer. Laurance Oliphant was a native of the Cape.

The time passes rapidly. I mentioned in the last letter my discovery of a mammal but whether it is from the Karroo or from some newer deposit is uncertain. I have found the distal end of the femur and proximal end of tibia of a mammal mineralized almost as perfectly as the Karroo specimens which are certainly the remains of a huge proboscidian far larger than the African elephant but closely allied to it. I can have no doubt that these are tertiary fossils, and they make known for the first time the existence in South Africa of rocks which are probably identical with the Siwalik beds of India and which may yield as important a fauna. But where are the rocks? It may seem incredible, but it is a fact, that there is no history to the specimens; no one knows anything about them, and the miocene tertiary of the Cape have yet to be discovered.

Another discovery of some interest is a new Saurian from the Fraserburg district, collected by Mr. Bain. Of course I have nothing but a *badly* preserved skull. But such a skull that I do not know how to group it in any of the many divisions which I have made. It is about a foot long and has a mammalian aspect but is a true reptile (Text Fig. 2).



It is a new genus. The last day or two I have been chiseling at another vile Fraserburg specimen which proves to be a large labyrinthodont, with the rami of the lower jaw expanded transversely so as to cover all the palate except the median parasphenoid bone. There are *no teeth* visible at the sides of the jaws and therefore I infer that I have an animal with crushing teeth like Placodus. Unfortunately the upper surface of the skull is so badly preserved that it does not show one of the natural apertures, and is only clear about the articulation of the quadrate with the lower jaw. There are hundreds of specimens but it is difficult to make much of them though I should have been keener about them if I had not had such fine material at home.

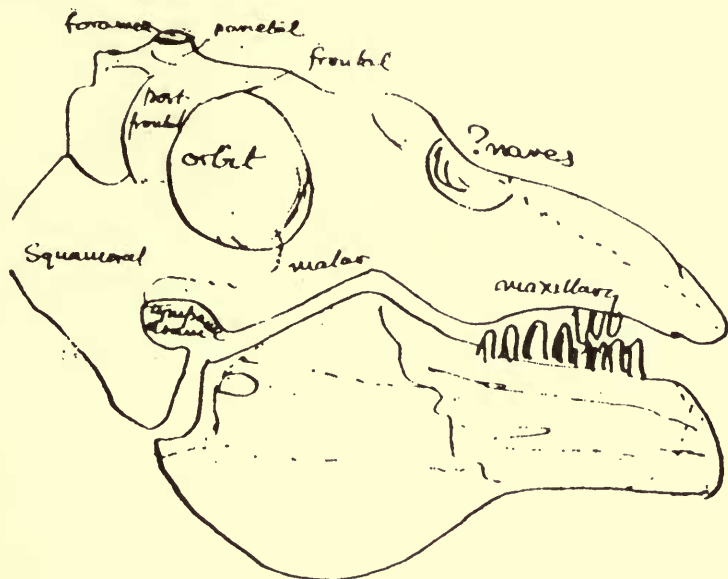


FIG. 2

Last Wednesday I dined with Mr Sidney Cowper at Wynberg and took a two horse covered cart to drive from the station to his house. The nigger drove me about à la Tony Lumpkin, till I got down and inquired the way at a shop. The ladies were stripped as much as black silks would permit although it was the depth of winter, and to their senses cold. On Thursday I called at the Government house. An A. D. C. returned my visit at once, and on Friday I went to the reception by General and Mrs Smyth; as she spoke of their friends Flower and Warrington Smyth. I have no doubt the Deputy-Governor is Sir Warrington's brother. I am invited to Dine with them on Friday. Events succeed so rapidly that I cannot remember half the things that happen. I have been to taste Mr. Stockdale's wines. He possesses 250 square miles of land in the wine district and is a brother in law of Atherstones. Sir Charles Mills sent me an introduction to the Premier to Lisbon for the Mexican which however arrived too late, and was brought on by the last Mail. Saturday is a half holiday, and I utilized it by going to sleep. This Sunday

I went to the Cathedral in the morning and found myself sitting next to Mr. de Jongh who came out in the same boat. I then went to Rondebosch. Had a few words with the Premier on the Platform, and at that station Bain met Atherstone and myself and drove us to his home where we dined. We were driven thence to Rosebank, made calls, and came on by rail to Observatory Road to spend some time with Gill. I unfolded to him my scheme for a Geosopic survey of South Africa and I am going to see him again on the matter on my return to Capetown. He estimates that it would cost £4,000 a year as I have sketched it. In view of this I am proposing to see the Diamond Mines of Kimberley, the gold mines of Knysna, and some coal mines in addition to the Dragon Rocks, since the Prime Minister cares about nothing but practical aspects of science. I should like you to send a copy of *Factors in Life* with a list of my papers enclosed, to Dr Gill, F.R.S., Astronomer Royal Observatory Road Cape Town. I gave one of the Factors to Dr Atherstone the other to Sir Gordon Sprigg, K.C.M.G., who was once a shorthand reporter in the British House of Commons. I find that Trollope travelled with Dr Atherstone and Atherstone tells me that Trollope used to write his notes day by day and send them to his wife who lived in Switzerland and that she put them together and wrote the volumes of his travels in the form in which they appeared immediately on his return.

Stockdale I find once possessed the diamond mines of the Cape when the country belonged to the Orange Free State immediately after the working began. The farm belonged to two brothers, Dutchmen who abandoned their holding when the diggers came. Stockdale found one and bought his share for £1,000. He then went in search of the other and found him six days up the Orange River with all his sheep lambing, and his wife within a day of her confinement. He was a difficult man to deal with being a dopper, whose yea is yea, and nay nay. So Stockdale helped him with his sheep and he asked eventually £6000 for his share of the farm. Stockdale took half an hour to think of it, and eventually agreed to pay him £5600 in a month. His representatives afterwards sold the property to the British Government for £100,000; and now £600,000,000 would not buy it, so he feels rather sore that the British Government stole the land from the Free State. He showed me a series of beautiful drawings of the edible fishes of the Cape made by the Drawing master who teaches his children. He tells me there is very little money in the country as money is understood in England,—very few people with as much as £10,000 a year; but also there are few very poor. I hear from Mr Wilmot the Editor of the Excalibur, that the Dutch are the Aristocracy, and hold most of the land. And so far as I can judge there is reason to think the discontent with the home government is rather with the English than with the Dutch, who are ultra conservative.

De Smit who is charged with stories, as dry as the Karroo, told me of a Hottentot who complained that his chief had used him very badly, and went to the Missionary. It seemed that the poor fellow had been kicked out of his house, and his girl had been taken away from him. The missionary promised that the chief should have punishment in a future state. Oh no said the Hottentot that won't do at all for perhaps he will be converted, and then he would escape punishment altogether; so punish him now.

I went yesterday to Sea-point by tram. It is wonderful to see the profusion of winter flowers while the hedges are made of the dark green grey Aloe, with its many vermilion heads of blossom, growing right down to the sea with the mountains rising close behind. Every day I find some little new thing. Yesterday it was the teeth of a mammal or mammal-like reptile, with crushing teeth with many cusps, exactly of the mammal type. But the skull had evidently crumbled. I also found in the museum a tooth which in England we should have called *Elephas primigenius* but which may be *E. Indicus* from some superficial deposit. A new fact in any case. I have also comparatively slender limb bones of Dicyonodonts like crocodiles only the radius is large and the ulna small as in mammals. Last Friday I went to the Lower House and sat in the Distinguished strangers gallery to hear a debate on the County Councils bill. I believe I am to give a lecture next Thursday on the Dragons of the Great Karroo and Drakensberg to the Young Mens Christian Association with His Excellency the Acting Governor in the Chair. Tomorrow I am going to lunch at the Observatory, and then go to a meeting of the Philosophical Society in the Evening (Wednesday). Today has been wet and windy. The winds which come from Table mountain are terrific. South Easters bring sand down in columns. The marvel is that the trees do not snap. Anything less like winter you could not imagine, so I fear that summer must be hot. I do not know that it would be possible to settle here, but you will have to think about it, if the Government should eventually ask my co-operation. I have conceived of a central Museum with a survey always going on of which it is the index, and a correspondence department for distributing scientific advice to the colonists. It would keep the Director very much in the open country, and away from home, making his maps and writing his reports; but it would be doing the best thing which has ever been imagined for the development of Cape Colony. You spoke of sending me papers by book or parcel post. They have not arrived. I should like a few copies of my list of papers.

Everyone here has an open eye and talon for the main chance. de Smit says the Grace before meat is almost interminable in a Dutch boor home and the moment it is over everyone drives his fork into the dish for the bit of meat on which he has fixed his eye. It is a type of everything. Everyone for himself and no one for the Colony.

Next Wednesday I shall be up country at Fraserburg, and my letters will now become more irregular.

Thy loving husband  
H. G. Seeley

CAPE TOWN

My darling Wife,

I was glad to get your letter with Enclosures from the children. Just after closing my last letter the Geol. Mag. and Castle book came having taken a week to get delivered owing to the curious law that printed matter cannot be intercepted here but must first go to its destination. I went out to the Observatory last Wednesday and discussed with Dr Gill the financial aspect of my Geosopical Survey. He has £800 and a house. He says I should have to pay £120 a year house rent, and he



thought that as the heads of departments here receive £800 to £1000 a year, that I should probably have £900 a year. He went into all matters: the ages of the children, your feelings in the matter, &c. In the evening I went to Rosebank station to see Mr. Allis a photographer who was intimate and related to William Saunders of Bristol, and got some idea of the interior of the country. He is going to make me a few slides for the lantern, but his charges are very high. I came in got a hurried meal and went to the Philosophical Society. There was an interesting paper on sand-dunes upon which I made a small oration. Thursday I went to the General's reception and he asked me to drive down to the Y.M.C.A. with him, and dine with him first. So I dined and Mrs Smyth and the A.D.C.'s went to my lecture on the Dragons of the Drakensberg. I had a distinguished audience, but they have omitted the lecture from the newspaper's report, and have only given something from its head and tail. I returned to Government house after the lecture, and found Captain Baden-Powell drilling his choir of magpie minstrels in the great drawing room. Excellency was exceedingly kind; and I find that Mrs Smyth is sister to the wife of my old College tutor at Sidney Sussex J. W. C. Ellis. I forgot to mention that Dr Gill in seconding the vote of thanks hoped that the Colony might soon have the advantage of a Geological Survey, and that when I next came to the Cape, I should be tempted to remain. So you see, matters are advancing. This morning an old Sidney Sussex man Revd Wm Tobias a converted Jew who I knew at Cambridge came to see me. He is rector of Beaconsfield which adjoins Kimberley. I have arranged my trip with Mr Bain. But I do not know whether Dr Atherstone will come. He wants the Government to pay him two guineas a day and his expenses for accompanying me, and as the Government is doing so much for me I do not like to press it, and yet the old man's evidence is very valuable. As the Colonial Secretary was in the House I saw the Under Secretary Mr Willis, and delivered to him my itinerary. He will write to all the Commissioners to prepare to receive me and Mr Bain and Mr Sidney Cowper will telegraph to them at all the places to which I go to get ready to give me help. Mr Bain tells me, he proposes to draw an advance and get his work passed on his return as the simplest way of providing cart hire &c. I think there is nothing more in the Museum that will repay work, at present. I dine tonight at Government House with His Excellency the Administrator, and tomorrow I lunch with the Prime Minister at Rondebosch, where he lives. Dr Atherstone has been seriously unwell with a chill. The dinner tonight was a grand full dress dinner brilliant with military and naval dress uniforms which I had never seen. The French consul, a German naval Captain, Mr. Fairbridge a trustee of the South African Museum, with his wife and daughter who of course claimed acquaintance as an old pupil of mine at Miss Haswell's, and of course remembered that she had only 60 marks in the examination while two other girls had 95. This is the rotundity of the world. An Engineer officer building fortifications, du Bouillac, gave me an account of a living animal of the form of the plesiosaurus which chased seals, which he saw in Simons Town Bay and approached within 15 feet, when it dived under the boat. The Fairbridge people have asked me to dine with them on Sunday, but the old gentleman has so much energy that unless I can get Dr Atherstone to go with me, I am afraid he will be rather ex-

hausting. I have gone over most of the materials in the Museum and am amazed at the poverty of the Geological and mineralogical collections. Parliament has just granted £4,000 to build a new wing ; and Dr Gill suggests that it should be built in accordance with my scheme so as to arrange eventually for a quadrangle with the Library one side, an industrial museum parallel to it, the recent collections on one side, and the fossil and mineral collections on the other.

At Sir Gordon Sprigg's I met Lady Sprigg and her two daughters, Mr Hofmeyr who controls the ministry and is the head of the Africander party, Mr. Blake, Mr Fairburn, Mr and Mrs Norton and Mr Pearson. The conversation was on Leprosy, Winds and sand dunes, the Museum, and such like topics. After lunch I went with Gill to the Observatory to smoke. He told me that Sprigg has no means and depends upon his official salary. Sir Thomas Oppington is always hopelessly in debt, and is without political principle. He is Attorney General. Mr Tudhope the Colonial Secretary, has been in business, has been newspaper editor and bankrupt again and again. Col. Schembrucker has not a farthing, and sticks to office at any price. This is the ragged regiment of a Colonial Ministry. The Government was constructing a railway to British Bechuanaland, and were compelled to the influence of Paul Kruger the President of the Transvaal, exerted by Mr Hofmeyr to give it up and make a railway to Bloemfontein instead, because the other railway would have brought British troops to the borders of the Transvaal and the Government has so little independence that instead of going out, they gave up their railway and stuck to office. So far as I can judge Hofmeyr is a man of little education, though he is astute. The best thing I have heard of him is his proposal to include all the South African Governments in a Customs Union. This is sound policy, and the single gleam of Statesmanship, among the cloud of time serving and self seeking schemes. Here it is every man for himself, and no one for the country. I think the soundest practical policy will be to endeavour to educate Hofmeyr who alone has a strong following, and who will not take office. I heard on Saturday that the Government propose to allow £55 for cart hire for me to get about, £15 for conveyance of specimens to railway stations, £15 for Mr Bain's personal expenses, while they give me Mr Bain's services for 40 days. While all specimens are to be sent free by rail O.H.M.S. Is this not generous? I find Dr. Gill will pave the way with the Prime Minister for a statement from me, on my return as to the importance of developing the Geological and Industrial resources of the Colony, and we are quite agreed that nothing but a Geological Survey can prevent the tail from wagging the dog,—in other words can prevent the Transvaal from absorbing Cape Colony sooner or later. On my return Dr Gill proposes to arrange a meeting at the Philosophical Society and get the ministers to be present so that I may say all that I have to say on the basis of personal experience in the Colony. Mr Wilmot, the Editor of Excalabur, wants to publish my lecture in full as a supplement to his paper but of course I have no notes. This morning Mrs Smyth sent me a note from Government House asking me to lunch or dine with them today, as it is my last Sunday. Tomorrow night I start up country. The first stoppage will be at Prince Albert Road to which I return after traversing and crossing the Zwarte Berg range. We then go on to Fraserberg Road station, and spend three days fossil hunting, then to

Beaufort West all in grand mountain scenery with superb passes, through which Bain has constructed the roads. We then go by cart over the country to Aberdeen and Graaf Reinet, and so on to Cradock. I believe we then come down to Grahams Town where I may lecture. I shall then get up by Queenstown to Aliwal North and Burghersdorp, and then up to Kimberley. Then back by Rail to Cape Town. I think I have quite got over the excitement of the newness of the country, and feel in sound health. The lower temperature of the last few days has contributed to this, not less than the sense that there is nothing more to be done in Cape Town at present. There has been heavy hail here, and I hear that the mountains yesterday were white with snow.

I sincerely hope you are all well and happy. You will see from my letters how I have been thinking of you in a practical way, and I trust it may be that we shall someday come together to the Cape, though it is much which we should leave behind, if I should be offered the appointment which I am trying to create. What you say is very true about Miss Schmitz and Kings and my work at home, but I could do no more than I did. And here all my efforts have been concentrated on diplomacy to secure the future provision for you and the children which I do not see at home. I will do what I can for Rix.

Thy loving husband  
H. G. Seeley.

UDTSHOORN  
CAPE COLONY

7th August

My darling Wife,

On Sunday last I dined at Government House Cape Town at 8 o'clock. There was no one but His Excellency, Mrs Smyth, the 3 A.D.C.'s and myself. They are charming people and nothing could exceed the friendliness of their manner and expressions. I had great difficulty to get ready for the start on Monday. But at last at 8 o'clock at night I found myself at the Railway Station. Before starting I got letters from the Superintendent of Railways that a special compartment was reserved for me and Mr Bain; and from the Government enabling me to frank all fossils as on the Government Service (O.H.M.S.). Mr Bain's son and his wife came to see us off. And as the train started it was greeted with cheer after cheer as it left the station on its way to Kimberley. We passed over the Hex River Mountains which were covered with snow and through striking mountain country, and talked till nearly 1 o'clock, when we got a cup of coffee at a way side station and went to sleep, in our clothes and wraps. We got a good breakfast in the morning at 7 o'clock, and at about 1.30 arrived at Prince Albert Road 2500 feet above the sea, and 200 miles from Cape Town. Here I posted my proof to Rix for the last Mail. And then leaving most of our luggage we started in a two horse covered Cape cart for the 30 miles drive to Prince Albert. We were on the Karroo Plain and before stretched the great range of the Zwarte Berg towering up in endless peaks with its surface scored by endless gulleys and valleys. It was a wonderful



drive for me. For the surface was covered with stones as it had been from the Beginning. We stopped to examine limestones and other rocks by the way and to note the little pyramidal hills called Koppe's. The Karroo bush and a few thorny mimosa's were the common vegetation. At the halfway House we outspanned and had some excellent Java Coffee. The old Dutchman showed me little bits of green copper ore which he had found. He had seven children, had lived there 5 years and his eldest daughter who had a complexion like *very* dirty linen told me they had had no rain since September last, and that they could grow no crops. Nevertheless the goats looked grand, and Bain told me that after rain the vegetation grows almost beyond belief, and the animals fatten in a week or two. We inspanned and went on to Prince Albert which lies at the foot of the Zwarteberg to which we descended, getting in by moonlight in a cloudless sky, not inconveniently cold. After Dinner the Commissioner waited upon me and said he had received a telegram from the Premier and Letter from the Colonial Minister to aid me in any way possible, so he told me of search for coal and of the fruit industry of the place, and other matters. At seven o'clock this morning we started with 4 new horses to cross the Zwarteberg by the new road which Mr Bain had made over the pass, which was opened 15 months ago. It is a wonderful work like the Gemmi only much better, made by convict labour. He says the convicts become so skillful that whereas they were only worth 3 pence a day when convicted they readily earn 5 shillings a day when discharged, and the only recommendation the farmers require is evidence that he has been a convict. We saw a wonderful rock called Trap-conglomerate on leaving Prince Albert, full of rounded bounders. And on entering the pass the rocks on one side were golden with lichen. They dip to the south, and soon become folded and contorted almost beyond belief. Up we went and outspanned at the only house, near the summit or neck of the pass, between 5,000 and 6,000 feet above the sea. Here we got some coffee and Bain produced corned beef and bread, butter and other accessories from his bag. There was a little snow at the top and all the way up, the ruins of successive convict stations, which are unroofed as they are abandoned because the roofing is corrugated iron. We inspanned again and went on with two horses which overtook us as we descended a little into the Oudtshoorn valley, which is the richest part of the Colony, well cultivated and full of fruit. Many teams passed us. One of 22 oxen was going to take a waggon load of oranges into the Transvaal. Here and there was a dead ox, killed by the cold.

We looked away to the North over the Karroo and saw seven parallel ranges of mountains stretching below us, limited by the Neuwfelt range go away to the North standing out clear as possible on the horizon. On the south side stretch the Cango Hills, which are for the most part rounded limestone beyond which are the Otoniqua range. The happy valley was everywhere well cultivated. We descended lower and lower and passed the celebrated Cango caves but had no time to visit them. The stalactites are formed of white Baryte. We outspanned at the Kango arms where they charged a shilling a cup for coffee. And then passing many tobacco sheds where the leaves were drying we entered a narrow valley called Schoemans Poort and examined the wonderful metamorphic rocks, limestones formed of limestone pebbles but full of black and white mica, slates showing cleavage, sandstones



full of rounded boulders of all kinds of old rocks, and quartzites—the latter traversed by quartz veins, which we afterwards heard that gold had been found. We saw orange groves in full bearing with 4000, to 8000 oranges on each tree, mandarin oranges called Natje, and citron from which the people make an excellent preserve. The best brandy is made in this country, for there is no railway, so the people will not make wine. And the demand for cigars is far beyond the quantity they make. The tobacco sells retail at 4 pence a pound. Cigars at 10 shillings a hundred, though at local hotels they are 3 pence each. We afterwards passed forests of Prickly pear which is over-running and ruining large tracts of country Mr. Bain showed me the Kaffir antidotes for snake bite, and other plants which are used as remedies for kidney and other disease. At length after a 45 miles drive we reached Oudtshoorn by moon-light. It is a fine township with the best hotel I have yet seen. Here was Mr Bain's daughter and her husband Mr Bromley who was at Rondebush when I dined with Mr Bain. We talked with intelligent Transvaal and Australian diggers, dined well, tasted the delicious cape gooseberry jam which is eaten with custard, and the dried pears which are first peeled and salted. All kinds of fruit are dried but the supplies of the year were all sold.

As on board ship they bring a cup of coffee to your bed room in the morning. We got up at 6 started at 7 with two stallions. We outspanned at Hassenjacht where we breakfasted in the open air. There was to be a sale of sheep and goats and many Boers had arrived. They boiled some water and Mr Bain made coffee and produced breakfast of corned beef, bread, and oranges. We had left the butter on the top of the Zwarteberg pass. We were now on our way to recross the Zwarteberg by Meirings poort, through which the Oliphant river flows. We next outspanned at the entrance to the Poort at Rankin's and got coffee and eggs, telegraphed for letters and bought a pipe made of the Protea a red wood which looks like a fine plait. Here the slaty rocks have an uncomformable bed on top. The poort runs N. and S. and consists of rocks folded over each other very cut through by the recession of a waterfall. In the middle of the pass we diverged to examine a waterfall, which comes down into a rock basin, and is now excavating a gorge for itself. The pass is 10 miles long and say 2,000 feet deep where deepest. At night we reached Klaarstroom = clear stream, after a ride of 36 miles. It is one house with a shop at the north end of the Poort. Looking back from it you saw the gap in the southern mass of the Zwarteberg separated from you by a low range of hills which seem once to have dammed up a lake. We had goat for dinner and citron jam or rather preserve. The house went to bed at 9-30. We got up at six, when a girl brought us coffee in bed, started at seven and outspanned in Blumendal by the graveyard which adjoins the road has no tombstones and only marks the spot with a layer of rounded stones gathered from adjacent land. We gathered sticks and Mr Bain made a fire, boiled a kettle, and soon made coffee. We got some capital bread at Waarstrom and sat down to breakfast. All day today (Friday) we have been travelling along the strike of the Zwarteberg, so that very little geology was to be seen. We stopped at a farm and bought 50 oranges to take into the Karroo, but here far from anyone they charged 4 shillings a hundred. The daughters climbed the trees and got them down and I found the fresh ripe

mandarin orange excellent. Mr Bain showed me some medicinal plants. Gawzabosch or Duck-plant is in great repute as a cure for cancer, and as a family remedy for most things. The leaves and flowers are infused as a Tea. It looks like a sort of vetch but grows as a shrub, it has a flavour as I found like rhubarb only much more pungent. A favourite cure for snake bite awarded £500 by the Indian Government to a man who learned it from a Kaffir is Wilde-Dagga called wild-hemp. It is *Leonotus leoneurus*. The covering of the roots, or leaves are infused and a cup taken every half hour. *Kruid-je-roer-myn-niet* is another potent cure for snake bite: its name means 'touch me not or I strike'. We outspanned at du Pleisses' farm where we got some coffee, and came finally to the entrance to the Zwarteberg pass where the rocks are much disturbed.

We are now back at Prince Albert. Mr Haak the Landlord who has been the round with us has got us some dried fruits and tomorrow we start for the Karroo and its bones. The silk bark is a curious tree which seems to have fibre like silk in its bark and leaves.

Thy loving husband  
H. G. Seeley.

TAMBOER,  
28 miles N. of Frazerberg Road Station,  
11th August.

My darling Wife,

... Here I am in the desert. It is marvellous. A land with rivers in which there is no water, a country without grass or trees, with the surface covered with stones and stunted bushes, generally level but with parallel ranges or low hills, with the naked rock often bare on the surface. Here there has been no rain for six months. The farmers often build dams to collect the water, but years pass without water falling to fill them.

Saturday morning we left Prince Albert at 7 o'clock as usual. I noticed the high incline and folding of the rocks as we jolted over the many little ranges of hills formed by the strata dipping to the north. After 15 miles we outspanned at Bote Kraal where the daughters cooked us sausages and breast of pork with eggs, excellent coffee followed by marmalade and good bread with Karroo butter which is fat from the great tails of the Cape sheep. These animals are full grown in a year; and in the dry season when there is no feed they live on their own tails in a way comparable to hibernating animals. We inspanned and then began an exciting race to catch our train for Eclipse and Polly the poor starved horses were worn out with work, and they stopped at every little ascent, and then on the level and had to be led, and rested dozens of times. We were carrying the Mails, and I never saw such a flogging to get them in time. However it was done and in the 28 miles, I am sure the animals did their last effort, for we had to rest them every 60 or 70 yards. At the station I met Mr Norton and Mr Douglas members of Parliament going home to Grahams Town, and at Fraserberg Road I got your letter. Here I found myself quite thirsty with the excitement over Polly and



Eclipse. Mr Marais who only speaks dutch was here with two carts and capital horses to bring us to Tamboer which is a 28 miles drive, so that we had nearly 60 miles cart ride. We arrived about 9.30 at night, travelling under the full moon and drawing near to the Nieuwfelt Mountains. This house stands quite alone in the Karroo, and yet it is a post office and a general dealer's shop and the home of a large farmer. We had supper and then went to see two fossils which had been got for us. One is a fine skull of a large new Labyrinthodont, shaped exactly like the head of a crocodile only the back of the head is much higher; it is about two feet long. The other specimen is a beautifully preserved skull of Pareiasaurus without the upper part. This Sunday morning we went on to the roof of the house and saw nearly the whole vertebral column of the same animal but without the limbs. We rested this morning and drove out to Cypher where a Hottentot had been sent early to find some bones which were known to be there. We came upon a reptilian graveyard with the bones in the rock, and got out some beautiful limb bones with some few vertebrae. The remains being scattered in the rock though apparently all in a yard or two. But still there were no small bones of the extremities except an ulna. We chipped out another skull but could make nothing of it, and it was much broken in extraction by the Hottentot. But it is a new beast. We made a substantial breakfast of sausage and grilled breast of pork and eggs. Mr Marais brought a large water bottle and later in the day made us coffee in the velt. I marked the more important bones with vermilion, so that the pieces may be eventually fitted together and we loaded up. We came back to afternoon dinner of the tenderest Karroo mutton eaten with cabbage and a salad made of beetroot and sliced onions cut very thin. We drink water, which has the colour of water in a milky jug. And concluded with coffee, ending as we began with a long grace in Dutch. In the evening before sunset I went out to the velt to see a few bones which one of the herds had put together in a heap but though they were interesting to see I did not think them perfect enough to bring away. This country was formerly densely peopled with Bushmen with whom there were many bloody battles till holding the impregnable height of Tafelberg in the Nieuwfelt range the Boers crept up on a dark night as they afterwards did at Majuba Hill and shot down every man woman and child as they came out of their Kraals. For a long time before a Boer always shot a Bushman if he saw one, and a Bushman always shot a shepherd and drove off his sheep to the mountains. But it happened that a shepherd dozed in the afternoon, and the bushman crept up with bushes so that he was not seen, till the baboons were trained to defend them. They are tamed and were taken to the farm and as they never sleep in the day saw the Bushmen a mile off; and shepherds with baboons escaped while the others were killed. I tasted the Cambru formerly the food of the bushmen. It is very like a sweet tender turnip in flavour, has the form of a parsnip and varies with the form of the stones in the ground in which they grow. They may be six or seven inches in diameter and a foot and a half long. All over the country are Bushman digging stones, fragments of Bushman pottery, and in every rock shelter and cave, Bushman drawings of men and animals. The names of people are largely french, but they have forgotten their origin and speak Dutch, or rather Cape Dutch. All Boer hate coloured people. A missionary

at Frazerberg asked the minister of the Church if he might have an evening service for his Hottentots on an evening when the Church was not used. The matter was referred to the Vestry by the minister. But they were in a mighty rage that their own minister should propose the defilement of sitting in a seat which had been occupied by a Hottentot. The minister said to the loudest of the opponents I suppose you will allow that a Hottentot has a Soul, at which there was a grunt of doubtful assent. And suppose the Hottentot saves his soul and dies and becomes an angel in Heaven, and that you afterwards die, and are told to sit down beside that Hottentot, what would you do? To which he replied "I'd be damned, if I wouldn't fly out of Heaven". The Bushmen recognise their inferiority and say God first made the Baboons then themselves and lastly the white men. They call the Baboons the old people, and say they can talk as well as themselves, but are much too clever for they know well enough that if they did the Boers would set them to work and that they would have to wheel barrows for the rest of their lives. I saw some Baboons in Meirings Poort, but no great Troops. You would be amazed to see the fields of melons wild and bitter and useless, but I am told that in Namaqualand wild water-marrows furnish the only drinking fluid, and that even Lions seek it for drink.

Here the Tea is mountain tea prepared from the leaves of a leguminous plant which grows in the country, especially in the Zwarteberg. Our last view in that range before returning to Prince Albert on the 20 August showed a double unconformity. The flat topped hills are I believe all of Basalt.

This morning we were up before the sun as usual had our coffee and then breakfast, before eight so that we started soon after in a SW direction for Bad. Here we took a Hottentot who was dressing a goat just killed. The animal weighed about 70lbs. He looked like a demon with his burnt sienna skin and broad flat nose, though he shook all over with a kind of palsy. Finding he was of no use we took his son, who had a bad impediment in his speech and he was as stupid as his father for he wasted our morning walking round the stony hills seeking for a fossil which we did not find. Mr Bain gave the duffer a shilling and we went on to Finders Fontein to see the reputed quicksilver spring. There seems to be no doubt that a little liquid metal was formerly found. But all that we saw was the most fearful sulphuretted hydrogen spring which I have heard of. The flavour of the water was indescribable, and I do not know when I shall get the stink out of my nostrils. I noticed that the spring in running away deposits a black powder. Mr. Bain got the Hottentot farmer who lives there to fill a bottle with this for analysis, and took samples of the rocks which I expect will yield antimony, bismuth, or silver. Mr Marais made us coffee and we resumed our journey back to the Bath. The farmer drives up inclines in the rock of 1 in  $2\frac{1}{2}$ , without roads, up steps in the rock six inches deep over stones looking as though heaped before making a pavement. The ground is usually reddish brown, or grey brown:—sometimes greenish so that it looks at a distance as though covered with winter grass. Where this fine shale is found it is often rippled by the wind. Here and there is a bright scarlet aloe spike of blossom, or a bush in yellow flower, or a green mimosa with its myriads of dagger thorns, but for the most part stunted bushes eaten down by the sheep. We met



one farmer trekking, trying to save his flock by going to a district SW where there has lately been some rain. The want of rain I believe to be due to the wholesale cutting down of trees. Everywhere you see trees peeled of the bark. The farmer allows the bark cutter to take a load of bark which destroys about 70 fine trees, for a sheep, which is worth about 7/6d (seven shillings and sixpence). When remonstrated with he says there will be wood to last his time. No one plants, because the tree might not be of use in his time. Yet when the lambing time comes and he has 5000 lambs say, he will cut the throats of 2000 or 3000 to save the ewes ; and I believe he might save all these if he would preserve and augment his timber.

Arrived at Blu Kop, Mr Marais brother's farm. We had mountain tea, took him up and started for another saurian it proved a good one head body tail and limbs all resting right way up as the animal died. The small bones of the extremities were not there. It appears to be a smooth skulled Pareiasaurus about 11 feet long. We had no suitable tools to get it out and no means of carrying it away. We left the cart far behind and the horses with us, with pick, spade, hammer and a little chisel. It is unfortunately in a crumbling blue shale and the bones are already broken into many pieces with effects of hundreds of years sunshine and frost. Still I determined to try to get it away. We chiselled and pecked and got the head out in many pieces. Everything will be similarly broken but at sunset we stopped and arranged to return with bags to put the bones of the several parts in and a waggon with packing cases, so that it will not be all lost. The ulna has the mammalian form. The radius is relatively stout as in a reptile, the femur is moderately long, and a finger bone shows, that the foot was short. We previously knew nothing of the limbs, and in many respects it adds to our knowledge. I am going to Fraserberg to reach Klip Fontein in search for mammals. It is wonderful to see these beasts in their native rock lying almost free on the surface. Such an animal ought to require 4 days to extract but I cannot afford the time.

Thy loving husband

H. G. Seeley.

ROYAL HOTEL

BEAUFORT WEST

Sunday 18 Aug. 1889

My darling Wife,

I was glad to get your letter of the 25th July tonight. It had been locked up with one from Fotheringham because there was a penny to pay for redirection but Mr de Smit sent for the Postmaster and made him disgorge.

On Tuesday 13th August we started again at 6 o'clock in the morning to cross the Neuwfelt Mountains, Mr. J. S. Marais driving us as far as Bex Platz. Marais is a well-to-do farmer, a boer ; and neither he nor his family speak a word of English. Mrs Marais does the household work, and this seems the rule with the boers. Their houses are of one story, and built as a rule to enclose an angle which gets the morning sun and the afternoon shade. The front is always raised and often has a verandah with vines or passion flowers. Mr Marais' house opens by a front door, which

leads at once to sitting room in which hang the guns, the marriage register with names of all children born, a few texts in Dutch in large print, and a looking glass. The chairs are heavy and stuffed with horse hair. On the right is Mr Marais bedroom; I occupied the room on the left. Opposite the front door is another door communicating with the spiese-saal in which the family take their meals; to the right of it is the kitchen and the larder is beyond Marais bed-room. There is always spring bock or steen-bock or beef hanging in the sun to dry, when it is called biltong; and is cut in thin slices and eaten raw when travelling; and I must say it is good. On the other side of the house are the bedrooms, with doors opening outward; and beyond the bed-rooms the general dealer's shop and at the end of all the post office. Behind this are the stables. I have taken kindly to the boer and find him everywhere exceedingly kind and hospitable and anxious to be of service. We reached Bex-Platz [Beckseplass] about 8 o'clock and had breakfast. The farm there is a partnership between a young Dutch boer and a middle aged Russian Jew, known as Mr Benjamin, whose real name is Novics. They told me that he fled from Memel in disguise and wandered in Russia for 6 years under an assumed name till he got a passport, and came to England. He is now naturalized, has married a Dutch wife and eats pork like a Christian. We breakfasted on grilled slices of mutton and coffee; which is almost always excellent, and is the drink of the country which every boer offers you. Mr Benjamin loaded up, and we started again for Frazerberg; which we reached soon after 7 o'clock at night. We were soon in the mountains and I was never more amazed to find the rocks perfectly horizontal, undisturbed by any upheaval. [*Insert from margin of page "Fotheringham says there is not a single honest reef in the Transvaal"*] The pass is called Oude Kloof. As we climbed up it was always to see a succession of flat topped hills just like the scenery of the American Cañon country, and quite as volcanic. Dykes of basalt form a network through the country and penetrate horizontally without appreciable tilting of the sandstones and shales. We drove past Steenkamp's-Poort (pronounced Stinkum's) but stopped at Paul Melan's. He too is of Hugonaut family, but now only speaks Dutch. Yet in his mouth the language is soft and beautiful, every movement of his body is graceful. As he speaks his hands move expressively and quietly, and his face lights with smiles, what is otherwise as earnest, honest frank and rather commanding face. His wife though a Dutch woman seems to have caught his sweetness of manner but they have no children to succeed to the most tasteful inheritance which I have seen. He had a hand of a saurian and said that his brother had found it on a large slab, and finding the slab too heavy had thrown it away on the mountain breaking off the hand. On our return the brother should take us to it. I believe it is the missing mammal I am seeking but it is fractured through the carpus just at the point where the interest is most intense. We pressed on to Balmoral which somewhat reminds you of its Scotch name-sake and was formerly the farm of Mr Finlay, Mr Lütte gave us coffee; and we inspanned and soon found ourselves on a plain more than 4000 feet above the sea without any appreciable descent from the mountains. The sky grew dark and everything betokened a deluge which would have brought wealth and joy to hundreds of homes. Sheet lightning and thunder were imposing and there was a little rain but it ceased by the time



we reached the Frazerberg Hotel. Here the commissioner Mr Mynheera and Dr. Manson came to receive me on arrival. I went in the evening to see Mr Erth son of the President of the Cape Town Young Mens Christian Association, who fetched me a fossil from the house of the Rev. P. D. Russouw which indicates a new saurian genus. His Reverence is away so I could only ask to have it sent to me.

Next morning Jehu was again in his seat at a quarter to seven and we were off for Klip-fontein in the Mountains  $3\frac{1}{2}$  hours drive to the SE. We drew near to the back of the Tafelberg and reached Klipfontein about 12 o'clock. The district is occupied by the Erasmus family who were eager to help us and showed us where Mr Finlay obtained his specimens. There was a hand somewhere well known to all the boers, which might have belonged to a specimen, *Theriodesmus* which I figured but no one could take us to it. We found a few reptile bones, and a few fish fragments, but they were not worth the ride we had for them. We had to go the round of the Erasmus's and drink coffee with each of them after dining on our arrival with the head of the family. The rocks here are what are called the top of the Stormberg series where the shales are baked by covering lavas (now denuded) and where volcanic ash included many vegetable remains, too imperfect for identification. In coming back we examined the spot where Mr Russouw's fossil was found in purple shale, and reached the Frazerberg Hotel about 7 at night. Next morning we visited Mrs Finlay and obtained a few of her husband's fossils,—he being now in the Transvaal, and Mr Benjamin was sent off to buy gunny bags, so we did not start till after 8 o'clock. We intended to breakfast at Balmoral, but Mr Lütte had sprained his loins, so was in bed. The house was full of the Finlay family on their way home ; so we got no breakfast. On the road our bread and butter came out with the Biltong and we drove down to John van Renau's at Steenkampspoort. At Klipfontein I was brought a lump of sulphur from a neighbouring farm, perfectly pure which was said to extend over the surface of the country in a vein rising above the surface, a part of it was yellow and part brown, as though it had been heated. At Balmoral there is a reputed diamond mine, from which no diamond has been obtained but because the rock is exactly like the Kimberley rock people are putting their money into it. They say there is a crater. I did not visit the spot, but I shall be amazed if any diamonds are found, first because of the decomposition of the rock has not liberated one on the surface, and secondly because there is no coal below out of which diamonds could be formed.

Van Renau was in the Navy speaks English, and thought that Sir Charles Lyell must now be very old. He brought Russian prisoners home from the Crimea. A hale old boy who regretted that he did not know much about fossils, having been a sailor. I said we could hardly expect to find fossils in the open sea, and he lamented that it was so. In his loft there were a few bones, of no value through bad collecting, but I picked out some scutes very like those of a crocodile. Mr Bain now began to knock up with the severity of the journey. We had coffee with Mrs Melan at Oude Kloof, and she gave me the coveted 'hand'. We went to her brother, who lives in a tent, but he was away having waited for us as long as he could. So the coveted animal to which the hand belongs had to be left, to my infinite regret, on the moun-



tains somewhere between Oude Kloof and Beaufort. Mr Bain got bad, just like a new hat that you accidentally sit upon; it seems to be a habit with the colonists to collapse like a child's house of cards. So I did not stop to make drawings of scenery, which was magnificent and much more impressive on the return journey. We reached Bex-platz where Mr Bain got to bed at once, and I dined with my Jew and Dutchmen. Mr Baron another Russian Jew, a feather buyer told me that you can now buy an ostrich for from ten to 15 shillings and that you can pluck it twice in 18 months, the feathers being worth 15 shillings at each plucking. The sheep are every where in good condition, although there has been no rain for 9 months. A farmer remarked that if rain fell twice a year everyone would be prosperous, but sometimes years pass without rain. Mistletoe grows luxuriantly on the mimosas and is found to be an excellent food for cattle, but the Boer with characteristic want of thrift cuts down the tree to get at the mistletoe so that the supply ceases. I had some cape brandy went to bed at 8-30 and slept like a top. Mr Bain was



FIG. 3

much better and we started for Tamboer about 6-30 where we once more had a good meal in the house of John Marais. Mr Bain got well as he knocked up. I got him to write a letter in Dutch to Paul Melan and he sent five shillings with it, to pay a Hottentot for carrying the specimen, if it can be found, so I hope it may eventually reach Cape Town. Marais had found a new skull, a very striking animal but either it had been carried away by a herd or washed away from the skeleton for it was freshly broken and very imperfect but still a new animal, though I know not what. We visited the spot and traced some fragments of the bones for a quarter of a mile but too imperfect for identification. After dinner we started for Bad. The bath is so in name only for no one here ever seems to wash, and except in towns water is too costly to be put to such base uses. The waggon had started long before with a great box on it in which the beast was to be packed. It was drawn by a team of Donkeys. We started in two carts and Sarel Marais of Blaauw Kop the discoverer of the saurian was on the spot on our arrival with a man so that we were 8 men and a boy. Rapid progress was made in quarrying out the animal which was in a bad state of preservation being in friable shale. So I am afraid much of its limbs have been left behind and I know its ribs have been partly destroyed. Still soon after sunset it was in its box, or coffin as the boers said, and we were all mounting the carts, except Marais' three grown up sons, who were left to drink coffee

and bring back the bones. We had coffee with Sarel (=Charles) Marais. He lives in a very poor hut and the seats of his chairs, like those of the Erasmus family, were made of crossed throngs of raw hide. The room was dark, with no ornaments, and the furniture poorer than in the house of an English labourer; yet he was building

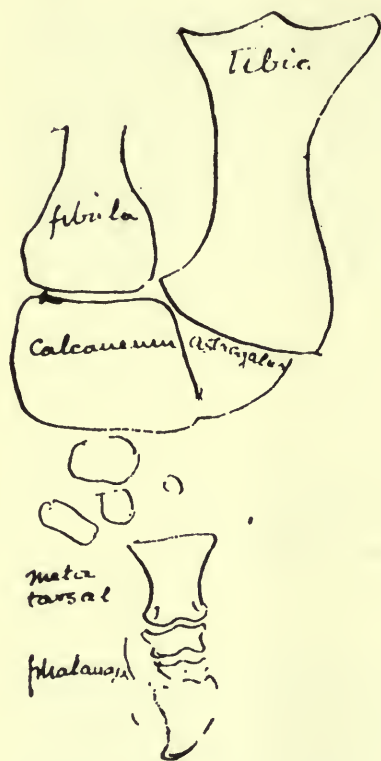


FIG. 4

a dam, and digging for water, and manfully trying to feed his babies by cultivating his farm. If the specimen had been in better condition I should have taken a week to extract it. But I have already seen some of its characters which are of interest. Thus the pelvis is well shown and in side view it shows the contour so that the ilium is in advance of the acetabulum and the ischium and pubis must be arranged on the Mammalian plan (Text-fig. 3). I was astonished when the hind limb was unearthed. The proximal end of the tibia, in contact with the femur showed an altogether mammalian character. The bones, much stouter than the fibula as in mammals and the astragalus was united to the os calcis as in some mammals (Text-fig. 4). I was impressed by the absence of a pulley joint at the astragalus and by the large size of the calcaneum and saw that if the base of the fibula grew smaller it would result in a projection of the tarsal bone which would eventually take the mammalian form, . . . It was very interesting too to get one digit in situ and so prove that Pareiasaurus has claws and three phalanges in the digit as

in mammals. I was not less delighted to get some further light on the shoulder girdle. The scapula is a very large expanded bone with a slight spinous ridge, and a strong acromion (Text-fig. 5). The clavicle oddly enough is shaped like a bone in *Iguanodon* which Hulke has referred to the shoulder girdle. Of the coracoid I at present know nothing. I should have liked to remain seeking more Pareiasaurians but I cannot travel alone and do this work since no one speaks anything but Dutch. The thing would be to come with a waggon, with electric light, and all modern appliances; and work without hurry, when the bones were found. This animal was a little disturbed after death, for some beast crawling over him had knocked out some of his tail vertebrae.

I gave Sarel Marais a sovereign, and John Marais a sovereign and another pound was divided between John's sons. If I get nothing else I shall feel that I have something to show for my journey. . . . It was very difficult to restrain the men's

picks from destroying what was most important to preserve, as one was working at each end and others were belabouring the brute with hammer and chisel, and I was constantly at work marking fragments with vermilion paint to ensure their coming together again if they survive the journey. Marais's little boy amused us by proposing to look for the dragon's spoor, and Mrs Marais remarked in the evening, when I drew the form of the animal in the flesh, that he would have made capital biltong. She said she was glad the animals were all underground for she should never have been able to live at Tamboer with such beasts eating up the cattle. The whole country is, I hope now aroused to an interest in bones.

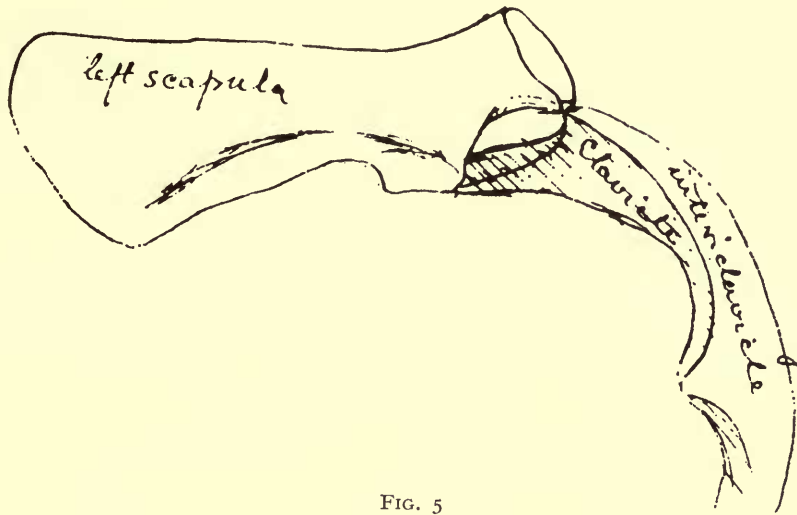


FIG. 5

I have settled the horizons of the animals. Pareiasaurus and Tapinocephalus, and perhaps Titanosuchus come from the lower beds of the Upper Karroo. I think the Dicynodonts are all newer. While newest of all are the long limbed Dicynodonts and mammal-like forms, which may be referred to the upper part of what are called the Stormberg, the Upper Karroo and Lower Karroo, and mass them in one formation. Saturday morning we spent in packing the spoils of other journeys. Two boxes were nailed down, while the largest and smallest were left for John Marais to fasten, and the whole will travel on his waggon to Frazerberg Road, and by train to Cape Town. After breakfast we started at 9 o'clock for the station, driven by Marais. We lunched there and examined some fragments of bones which we had put together before going up country, but now kicked them over as useless. At last the train came  $\frac{3}{4}$  hour late, and we arrived in Beaufort West, soon after 6 o'clock. Mr De Smit had come to meet us. I stayed at the Royal Hotel, and Bain at another place, and I am taking my Sunday morning rest in writing this while Bain is with his friends. This afternoon we start once more. But we are giving up Murraysberg and Graaf-Reinet as making the labour too severe, and running the time too fine, and instead shall make our way to Cradock



by rail, which will take one day. I wrote for your this weeks letter to be sent here, but it has not come. I trust you are well and happy. I have sent to you by every post since I landed. In the velt where everything looks parched and grey and every bush dead the sheep grow fat, so I hope it may be with our life if we come here. There is food if you take what God gives, is the lesson I learn from my life in the Desert, and that it is only a desert to those who demand that it shall grow European grass or plants which require a European Climate. You dry up, your nails break, paper breaks as you fold it, but still man and beast are healthy. Rheumatic fever is the severest ailment but the willow everywhere provides a cure, which is due to exposure to cold winds after the heat of the day.

My love to my daughters Maud, Brynhilda, Phyllis, and Sylvia. I have had no time till now to write to them severally ; but I remember that this month I am to sail in the Trojan ; and exactly a month from receiving this I shall hope to be with you again. I have yet far to go, to Kimberley, Aliwal North and Grahams Town ; but the journey is passing well, and every day will bring me nearer to you, when I shall tell you over again the story that I now outline, with my children eager about the brown men of this marvellous country.

Thank Phyllis and Maud for their letters which I am glad to have. This afternoon we have been to Welte-freede and got the ribs of another new beast. The ribs are like wide laths and form an impenetrable armour as in some edentate. We found the country covered with fragments of bone, and brought some away but nothing good.

Thy loving husband,

H. G. Seeley.

VENTERSSTAD, 29 August 1889  
 Burghers Staat, 31 August  
 Aliwal North. 1 September

My darling Wife,

In Kimberley the houses are largely made of corrugated iron and the streets are irregular, just as the tents were placed. Substantial houses are appearing made of brick and stone. House-rent is enormous. Mr Wright tells me that a four-roomed house fetches £250 a year ; and that the yearly rent of any house is one third the cost of building. Kimberley is in a great plain about 4,400 feet above the sea, almost perfectly level to the Vaal though the great bridge into Barkly West is 300 feet lower. The only hills are those made by man in the last few years by the Diamond mines bringing to the surface the 'Diamond-blue' rock, and pouring the washed material upon the surface. The hurry of life is great at Kimberley, and money is made readily and spent freely, the shops are good. The streets are named after the early makers of the place, Stockdale, Ebden, and of course there is a squalid 'Piccadilly' with the adjacent Regent Street and Oxford Street. On our return from Barkly along one of the dustiest roads I ever travelled, we devoted the next day to seeing the De Beers mine. Mr. Feltham had horses ready and

drove us out to it. There is a smaller yawning hole like that of the Kimberley mine which is about 600 feet deep and in the centre of the Town. The mine has large fields like a great farm on which the rock is placed as it is brought from the mine. Gangs of Kaffirs went over it with hammers and broke up the masses so that the eye could see that they were smaller even in the distance. In nine months the atmosphere breaks it up so that the rock can be washed. By night these vast fields which bear no crop but diamonds are lighted with electricity which is also used in the Town. The rock is a breccia full of fragments of lava, gneiss, schist, syenite, shales, and in some of the shales I found vegetable fossils, which appear to be the same as those in the shales which extend horizontally near the surface of the country. Many of the pebbles are waterworn, and even perfectly rounded. This is the material which fills the throat or pipe of what is regarded as a volcano, and I must say a more extraordinary volcanic rock was never seen. The throat is oval, it descends more or less vertically through grey shale with Mesosaurus black shale, amygdaloidal lava and quartzite. In the Kimberley mine which is now only worked underground, the working is now descending obliquely. The machinery for washing is very elaborate, and the circular pans which contain the substance which is not removed as mud are only emptied once a day. Yet men are ceaselessly occupied day and night in emptying iron waggons of Blue into the pans, and other scoops as rapidly carry up the mud and empty it on the ever growing hills. The stones which remain are picked over by convicts who put the diamonds as found into tin pots, and sweep the residue off the table into huge cans. This waste gravel is examined four times before it is finally used for road paving. I was there as the convicts left for dinner. They stript and each in succession handed every article of clothing to officers to examine for concealed stones. The company is beginning a nursery for planting their waste land with forests and have already an immense number of young trees raised from seed. They have built and nearly finished a village for their married white employees, and near it a smaller village for the unmarried. We then saw the diamonds obtained in the last two days which were all sorted. One stone rather took my fancy it was small but would have cut into a fine oval; its value in the parcel was only £3.10.0., but as a separate stone £5. I find that the price of diamonds fluctuates from 17/6 to 25/0 a carat and is now about 30/-. We then were driven to the Kimberley Club for lunch. (Kimberley wanted to entertain me at a public dinner but I could not spare time to stay for it). The club is splendidly built and fitted and as good in its way as anything in London with electric light throughout. We formed a little party with Judge Cole, and I also met there Judge Lawrence a former contributor to the Westminster Review. In the Afternoon the cart with fresh horses drove Mr Bain and myself back to the mine to go underground. We were taken down by Mr Gardener-Williams the manager in an inclined almost vertical trolley. On the 300 feet level we walked across the entire width of the throat and saw the amygdaloidal rock which surrounds the diamond blue. At the junction there is sometimes a slicken-side surface, and sometimes a seam of clay, and sometimes close contact. At the 600 feet level to which we descended in a steep incline in a trolley nearly on end, the temperature was very high and the blue rock was much more compact. After examining these

workings, we went down to 700 feet, where the Kaffirs were wheeling up waggons 4 abreast on tramways and emptying them with wonderful speed into the skips which each take 8 leads to the surface. We did not go lower. At an electric signal we were hauled to the surface, wet through with perspiration, with a temperature like a hot Turkish bath. After a short rest and a little drink we were driven to the Kaffir compound which is within the mine. It is an enclosure in which 1500 Kaffirs live and from which they never go out except to the mine during their period of service which is not less than two or three months. The night shift of 700 were there in their many coloured blankets, divided according to their nations, all looking very picturesque. Some were buying food or luxuries at the store, others cooking, others sitting in the sun or walking about. It looked almost like a bazaar to see their clothes or bundles hanging in front of these continuous one roomed dwellings. The hospital is large and roomy, one side for fever patients the other side for accidents. They are provided with doctor and medicine free, but have to maintain themselves while sick. They earn three to four shillings a day and cannot spend a penny on drink while in the compound. They undergo a five days detention in a special room before leaving to make sure that they will not carry any stones out with them. We drove to the Queen's Hotel for our coats and then to Du Toits pan at Beaconsfield which I had been invited to examine. It is a vast open pit like a figure 8 somewhat in form. We saw the streams of Kaffirs leaving work toiling up the sides of the mine while the bell rang. When it stopped boys lighted the fuses for blasting and we saw and heard the wonderful cannonade which prepares for the next day's work. And so back to the Hotel to dine, pack specimens and get off by the 8-35 night train for De Aar and Colesberg. At De Aar Bain began to get unwell again. We reached Colesberg at about 1 pm and stayed at the Vrÿstaat Hotel. After lunch we called on the Civil Commissioner, Mr Robinson, and Mr Bain went to bed while he drove me to a quarry to find Fossil fish, I got some fragments, a broken reptile bone, and bits of reeds, but found Dr. Holub had carried away everything worth having; so the Civil Commissioner proposes to put some convicts to open a quarry for me to obtain some. Is it not wonderful to think of being so much indebted to convicts. Next morning we went to a Mr Plumen's farm at Mr Bain's wish, and saw nothing but fossil trees, probably coniferous, mineralized with silica. I heard of a Mr Slutter's farm 5 hours drive away of 20 or 30 large trees with their roots lying prostrate parallel to each other as though overturned by a rush of water, perhaps an earthquake wave or the wave of a cyclone. Coming back after dining at the farm on bread and butter and tea, we searched Colesberg Kop a conical flat topped mountain of 1100 feet. Like so many of these mountains it rises out of a level plain, and is capped with volcanic rock. There was not a trace of a bone to be found. After our return we inspected the work of the prisoners at the quarry but no bone was to be seen, and no fish. So this morning the cart was ordered at 6 o'clock, but the landlord did not get up till nearly seven, so we were kept waiting. At 9.30 we outspanned on a tributary of the Orange River and cooked breakfast. It was beef-sausage about 2 inches in diameter which was fried in the open cooked with the fuel of the country gathered from the road where dropped by the Transport oxen. I did not care much for the sausage. At one o'clock we outspanned and



had bread and beef-biltong with coffee for luncheon, and afterwards examined some rocks for fossils and found them not rare beyond Bultfontein where the green shales capped with dolerite form a succession of hills like an escarpment. The fossils were not in good preservation and we saw nothing but skulls. This is very remarkable, and does look as though some of the animals lost their heads. Bain is irrigation officer and is zealously looking out for sites for making reservoirs so that when he has finished with it the colony will be known as the country of the dammed. We pass the night at Ventersdorp, and tomorrow go to Burghersdorp on our way to Aliwal North. Bain tells me that in Namaqualand where the ant hills are larger than they are here the farmers give up work when the pupae are ripe and dig out the "rice" from which they obtain an oil by heat, and then dry the pupae for food. A bucketful is obtained from a single ant hill.

I hope you are all well. I send my love and kisses to my daughters, Maud, Brynhilda, Phyllis and Sylvia. I come home in the Trojan due 8th October at Southampton. I have not wanted any winter clothing and so far have been as well as could be on these high plains.

Thy loving husband  
H. G. Seeley

Sunday. We reached Aliwal Saturday night and found Dr Atherstone at the Criterion Hotel. We walked into the Free State before breakfast over the Orange River and have spent today chiefly with Alfred Brown who is a poor man, the Librarian. He has lent me some of his best specimens which are either small mammals or mammal like reptiles in rocks with coal plants. Tomorrow we hunt fossils.

QUEENSTOWN, SOUTH AFRICA,  
4 September 1889.

My darling Wife,

We came over very high country after leaving Venterstad rising in a succession of terraces till we were 5600 feet above the sea, when the view extended probably for a hundred miles into the Free State. In the fore ground low hills sometimes conical or pyramidal or flat topped rose from the level plain, and behind them mass after mass rising sometimes in ranges sometimes in isolated clumps all of a warm red colour, growing higher in the distance where their outlines rose grey far beyond Bloemfontein. I saw the most terrible destruction of the country going on everywhere, for the rains are plowing up the country and forming gorges and deep running rivers which drain the water from the land, in districts where formerly no rivers existed and where the hills were clothed with forest. But as firewood is worth in places like Kimberley £14 a load the hills have been bared, so that much of the finest land in the world will soon become desert. We dropped down among the mountains of Burghersdorp, about 700 feet lower, and at a sudden turn in the road found ourselves in a not inconsiderable Town, with the usual broad straight



streets planted with trees and put up at the Prince Albert. They wanted us to occupy one room, reluctantly gave us two, then said we must put up with one. They acknowledged that they had plenty of room but were keeping the rooms in case they should be wanted, so I ordered the horses in again and determined to go on by train to Aliwal. It turned out afterwards that the landlord was keeping the rooms for ourselves. However his accommodation was bad and he was impudent, and we had heard from Dr Kannemeyer that Atherstone had already gone to Aliwal. So we went on in a goods train, in the guards van with the mail. Dr. Kannemeyer is an enthusiastic collector, whose duties as a surgeon carry him into fossiliferous localities. Atherstone left word that we were to put up at the Criterion. We found that he had already been to see Alfred Brown and arranged to see his fossils at 10 o'clock on Sunday morning. So we went. Brown is a short, withered looking miserable man of about 55 of the grizzled unkempt type. He showed me the Maxillary bone of *Euskelesaurus* of which we saw some tail vertebrae and pelvic bone in Gaudry's museum. It is shaped like the maxillary of *Megalosaurus* and has two teeth preserved. He has a few toe bones and claws similar to those figured by Paul Fischer. All of which he has lent to me with permission to sell to the British Museum for him, if he approves of the terms. But I was more interested in getting from him a large number of teeth and fragments of jaws, some of which I feel sure are mammals and some of which are mammal like, but unfortunately they are too fragmentary to show what they really are though indicating new genera. It was a great wrench to him to part with them for he loves his fossils as though they were children. After seeing them he showed us his living pets, a small zoological garden with the finest assemblage of Lizards, and some Tortoises, and birds. He had £50 a year as Librarian, and a pension of £30 a year, and told me he would gladly give up his position as Librarian if he could get £30 a year for collecting fossils. He has an interesting series of fossil plants *Stigmara*, *Lepidodendron*, *Glossopteris*, *Pecopteris* and other ferns, such as *Neuropteris* *Sphenopteris* and others new to me. So that I formed the opinion that the rocks are similar to the Indian and Australian lower mesozoic series which also contain coal; and I formed the opinion that these rocks are high in the series called Stormberg. Dr Atherstone contested my view, but some days later had to give in, I went to the Treasurer of the Library and begged a days holiday for Mr Brown who drove with us to the Kraai river. It is a good river and as the water was rising our driver, an old French-Dutch farmer, feared to drive through, because he might not be able to drive back. So we went over in a boat at the Wool wash which stands high above the river and yet is occasionally carried away by floods. A Kaffir carried our dinner and pots and pans on his head for two miles which we walked to the mountain. We searched and found many fragments of bone, but nothing of interest till Brown struck the lower jaw of *Euskelesaurus*. No one knew what it was. The articulation was of great interest and importance as showing the articular bone in the *Saurischia*. As Brown worked away he grew excited as a terrier at a rat hole. Unfortunately the anterior part of the jaw came to the surface and was lost for it was in a deserted waggon road, but there were fragments of teeth, sufficient to determine the genus. In the afternoon we drove back, to visit the locality where Brown got the mammal-like teeth.

It was a most unlikely spot, greatly denuded ; but Bain found a small and useful fragment of a skull. I was delighted with Aliwal and sorry to leave it. Next day we came south to Cyphergat [Syfergat] which is past Molteno to see the coal mines. Some coal ferns were brought to us at the Molteno station. And at Cyphergat we had to take scanty accommodation, two beds in a room at the highest rates. There are about 20 whites and 300 Kaffirs. Some of the whites were Ilkeston men from Derbyshire who had attended my Gilchrist lecture there. The coal seam is about 3 feet thick, with two thick partings of clay. The coal burns as well as much that we get. It is sold at the pits mouth at 14 shillings a ton. The Kaffirs earn about 18/- a week and live on 2/- a week, many never touch stimulants and save their money to buy cattle, others spend everything at the Cyphergat Hotel. The white men earn £6 a week and can live on 15/-. We went into the workings till it became necessary to crawl on the abdomen carrying your little lamp. We got samples of the plants, chiefly ferns, but after being in house all night the vegetable substance flaked off. Above the coal in the sandstone I found tree stumps standing erect one above another without underclay. The upper tree is carbonized, 80 cm high, and 25 cm wide at the base. The one below is in sandstone and is remarkable for having the roots jointed and ribbed like a Calamite, only in section the calamite form is an *internal* cast while the external carbonaceous tissue has the nodes elevated instead of being constricted. Some of the tree stumps are very wide in the extension of their roots. So that there can I think be no doubt that the trees grew on the spot and that the coal grew where found and is not drift coal. We also drove to the mine at Fairview where there are only two white men. Coming south to Queenstown we saw the far off hills towards Tarkastadt and much striking scenery. We left behind the raw winds of Cyphergat and we descended to level, came upon a land of rich farms in fine scenery near Bailey and further south on the west of the line. Enormous mountains are often red at the base with masses of blossoming Aloe. Owing I suppose to my movement I have not had any letter from you for a fortnight, and till I get to Grahamstown I shall have no news of you. I hope you are all well and happy. It is only a fortnight before I sail.

Thy loving husband

H. G. Seeley.

GRAHAMS TOWN  
SOUTH AFRICA,  
9 Sept 1889.

My darling Wife,

My travelling is now practically over, and I am looking forward to the journey home. From Queens Town I went to Lady Frere which is a days journey and there we got a vertebral column entire which will be most valuable. All those things have been sent to East London to go by sea to Capetown. Dr Berry who went with us gave me two good portions of skulls which anyone would say were mammalian but are probably reptilian. We parted at Queenstown, Mr Bain going to King

William's Town and I coming on with Dr Atherstone by cart. We crossed the Katberg in two days and had a grand view of the country and on Sunday reached Fort Beaufort, and am now here so that I am glad to have a days rest after 5 days life in a cart which always begins at 6 o'clock in the morning.

I have already taken a brief survey of the museum, which has at least *one* interesting specimen. On the whole the results of my journey are thoroughly satisfactory. If not quite all that I wish, at least altogether superior to anything ever obtained by a visitor to the colony. Tomorrow I am to lecture on 'Scientific Discoveries in South Africa', in the Public Library. Mr Bain joins me tomorrow, and on Wednesday we return to Cape Town. I believe I have two lectures to give in Cape Town, and I have to arrange about getting all my things to England. I have also my report to write for the Government on the Gold Fields, and various public men to see, with a view to future movements in future years.

And now a word to my dear children. I am longing very much to see you all and be with you again for I have had no letters for the last three weeks, though I have telegraphed for news to the Capetown Post Office.

I have seen so many children who grow up without ever wearing clothes that I shall be glad to get home to civilization. The thing I have missed most in the way of comforts is a bath, since the water is so scarce that you learn to wash in a teacup. I have seen wonderful plants and trees; but fewer wild animals. I have met with the greatest kindness from everyone. I had had the life nearly jolted out of me in being jolted by the carts over thousands of miles of country covered with big stones. I have seen an astonishing number of ugly people, and very few who are good looking, though many are well grown. I have seen more mountains than I could easily count and thousands more than I can remember. And now my darling on the 18th September I sail in the Trojan and pray for a safe and speedy voyage to bring me once more to thee and to our children; and to our Vine, when I can tell over again the story of this wonderful land of plenty in the desert. I have no doubt the Union Company would send you news of our coming to port.

Thy loving husband,

H. G. Seeley.

Please tell Miss Schmidt I shall lecture at Kensington Square on the Geological Succession and History of the British Strata.

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That the effects of Seeley's visit were not transitory can be gathered from the following letter sent to him by Daniel Russouw Kannemeyer, a keen collector and railway medical practitioner in Burgersdorp. The Dicynodont *Kannemeyeria*, of



which several specimens are in the Museum, was named in his honour by Seeley in 1908.

BURGHERSDORF,  
3rd May 1891

My Dear Sir,

I am much gratified that the specimens I have been instrumental in introducing to you have proved of such interest. I have always maintained that we had here the connecting links between Reptiles and Mammals. On a recent visit to Grahams-town Museum I found the various pieces of the best head I had contributed knocking about amongst heaps of stones, in several parts of the Curators room. One or two pieces I failed to recover. Originally it had complete upper and lower jaws, and the whole of one side of the skull. Perfectly undisturbed and imbedded in friable shale which a pen knife could clear, it formed a perfect example for minute examination. It was a different species from any of the others I sent. No other bone occurred with it. Recently I have again made a find which is new to me and may prove of interest. Five or six portions of maxillae and mandible, which I diagnose as Batrachian. The outer surface freely sculptured and pitted on the Lab. type; a series of small oval teeth closely set along the whole alveolar border; at a lower level and rising from the inside of the rami, are bold well defined canines, which under even a low pocket lens show Labyrinthic dental structure. In the upper jaw in a line with the canine a second series of more or less uniform sized teeth occurs extending backwards. I found no other bones of the animal. I have deeply burnt your remarks about the desirability of obtaining the bones of these animals into my memory, and have little doubt that I shall soon be in a position to supply the want. It is, however, a remarkable fact that one often gets a number of heads and no other bones. Brown, Aliwal, has a theory that the bodies were floating; as they decomposed the heads dropped off and the inflated carcass drifted elsewhere and gradually broke up. After I heard of your intended visit to Burghersdorf I cleared up some patches of bones in a bank of red shale, sloping precipitously into the river, about a mile from the village. I left things in situ for you. Recently Revd D. Fraser, Port Elizabeth, Inspector of Schools, present president of our Geol. Society, passed through our village. I took him to the spot. The heavy rains had washed away one patch, but in the other we found the greater portion of a dicynodon head, which he has added to his collection. On previous occasions I had found these three heads, all *D. (Dicynodon)* and one serrated tooth, but no trunk bones. The head differs from those I found at Bethesda.

I would have sent you the jaws previously mentioned, ere this, but I intend first to show them at our annual meeting of the Geol. Society, next July in Kimberley. We are all in the dark here as to what is really wanted at "Home", and it has just struck me that a letter addressed to us, indicating lines of research will be of the utmost value, will give us a much desired and needed stimulus, and be productive of results. Or you might give a very short summary of the results of your visit to S.A. which I could read as a letter. I fear we will have very few papers. The Society is in very bad hands just now, Atherstone's brain is softening, and he is no

good as President ; Wilmott has his hands full with politics, knows nothing of Geology and took the Secretaryship at a time when he wanted his name before the public in as many ways as possible, with an eye to his future election to Parliament. We all regret that the negotiations fell through which would have secured you for S.A. for some years. It would have given the study a fillip much needed. Our best man, Dr Shaw is dead. His idea was to start a Geol. Society and hold the annual meeting concurrently with the Teachers Annual Congress, in the expectation that some of the teachers might be around to take an interest in the subject and teach it as a living science. I have succeeded in interesting several of our farmers in geology, but stern puritans that they are, with one exception, they gave it up, when they saw that its conclusions tended to undermine their primitive creed as to creation and age of the world, etc. and that the wonderful fossils are not the remains of Elephants, Elands and other game.

Next Sunday I shall remove a jaw from a rock about  $1\frac{1}{2}$  mile from here. It is also one of the things I left in situ for you. It is a mandible, shallow and almost circular, but perfectly smooth on its outer surface.

During my next visit to Capetown I shall submit the Museum cellars to a thorough search. I must recover (a) the "Wonderboom" fossil, the four-canined one, (b) the minute animals I found embedded with it, (c) several heads I sent. Under the present curator in Grahamstown, there is a guarantee that specimens will be looked after. Dr. Schonland is no palaeontologist, but he does not neglect the material in which he is not interested. When the proposed removal of the S.A. Museum becomes an established fact, either to the castle or to a special building, we may hope to see some of the treasures now in the vaults exposed to view.

If you took with you a jaw partially cleared, with the condylar part of the ascending ramus wanting, I may mention that I have the fragment here in a block  $14 \text{ in.} \times 14 \times 10$ , which shows bone on all its surfaces. I have also part of the scapula (presumably : it was found with the jaw but weathered out.)

Yours faithfully,

D. R. Kannemeyer.

The correspondence continued for some years and the following extract from a letter in April 1895, shows that Seeley's memory lingered on in South Africa.

BURGHERSDORF,

22nd April 1895

Extract

. . . Your reported death caused much wailing amongst S. African geologists, but I kept up hope, still I was so much influenced that I tore up a long letter I was in the act of writing to you when the local editor walked into my study with Reuters wire in his hands stating " Prof Seeley is dead ".

Yours sincerely,

D. R. Kannemeyer.

A Professor Seeley was in fact dead, but it was the Professor of History in Cambridge, Sir John Seeley, who died on 13th January, 1895. As has been said Sir John was first cousin to H. G. Seeley.

It now seems remarkable that in this visit of a few months he should have been enabled to do so much.

He recognized the geological horizons from which the specimens that Owen had described had come. He explored the Lower Karroo rocks and discovered the *Pareiasaurus* skull and skeleton now exhibited in the Fossil Reptile Gallery of the British Museum (Natural History). He examined the Middle Karroo beds and found many interesting forms but not the whole *Dicynodon* skeleton for which he was looking. At Lady Frere, near Queenstown, the type of *Cynognathus* (R.2571) and other fine specimens were discovered and skulls of *Gomphognathus* were collected.

Not the least of his achievements were the friendships he created with important collectors and residents whose names are now preserved in palaeontological literature, such as Thomas Bain, Irrigation Officer ; Dr. Kannemeyer, with whom Seeley engaged in a lively correspondence over the years and which is now preserved in the library of the Palaeontological Department of the British Museum ; and Mr. Alfred Brown of Aliwal North who gave him specimens for the Museum.

In any case the described specimens came to the Museum where the Seeley Collection has long been appreciated and where much of it is on public exhibition.

The scientific fruits of this expedition were sufficient to keep the collector busy for years to come. As has been said they formed the major part of a series of papers in the *Philosophical Transactions of the Royal Society of London*. The series is entitled *Researches on the Structure, Organization and Classification of the Fossil Reptilia* and dated 1887. They are sometimes also referred to in this form in bibliographies and catalogues.

It may therefore be of service to enumerate the papers and point out their sequence :

Part I. (1887) *Phil. Trans.*, (B) 178 : 187-213, pls. 14-16.

“ On *Protorosaurus speneri* (von Meyer) ”.

Although this is not a South African reptile it was one which the Grant from the Royal Society had enabled him to see during his European visits preparatory to the Cape Colony expedition. In the paper he gave a full description and an excellent figure of the specimen in the Royal College of Surgeons collection, and as this was one of the victims of London bombing in the second World War the paper is still of great value.

Part II. (1888) *Phil. Trans.*, (B) 179 : 59-105, pls. 12-21.

“ On *Pareiasaurus bombidens* (Owen), and the Significance of its affinities to Amphibians, Reptiles, and Mammals.”

This was essentially a description of the skull and skeleton from Palmiet Fontein sent to the British Museum by Thomas Bain in May, 1878 and prepared under the direction of William Davies (Regd. no. 49426). Owen had originally regarded *Pareiasaurus* as a dinosaur and Seeley was able to correct this view.



Part III. (1888) *Phil. Trans.*, (B) **179** : 141-155, pl. 26.

"On parts of the skeleton of a mammal from Triassic rocks of Klipfontein, Fraserberg, South Africa (*Theriodesmus philarchus*, Seeley), illustrating the reptilian inheritance in the mammalian hand".

This splendid specimen of a reptilian forelimb and hand was collected by Mr. Thomas Bain and presented to the British Museum in 1878. It is registered 49392. Seeley sought to establish that it was mammalian but the consensus of modern opinion, like that of Bain himself, is that it is a Therocephalian, despite the formula (2.3,3,3,3) for its phalanges.

Part IV was, for some unknown reason, never published.

Part V. (1888) *Phil. Trans.*, (B) **179** : 487-501, pls. 75, 76.

"On associated bones of a small anomodont reptile, *Keirognathus cordylus* (Seeley), showing the relative dimensions of the anterior parts of the skeleton, and structure of the fore-limb and shoulder-girdle".

The little specimen was also collected by Thomas Bain and is registered 49413.

Part VI. (1889) *Phil. Trans.*, (B) **180** : 215-296, pls. 9-25.

This part was a much needed review of the anomodont reptiles and their allies, made possible by Seeley on account of his first hand knowledge. It is a paper which is still valuable to the student.

Part VII. (1892) *Phil. Trans.*, (B) **183** : 311-370, pls. 17-23.

"Further observations on *Pareiasaurus*".

This was, as the title suggests, a review of the osteology of that important Cotylosaur but it was illumined by many studies that the author had made in the three years since his earlier communication on *Pareiasaurus* and it was prefaced by a statement on the Geological horizons of South Africa.

Part VIII. (1894) *Phil. Trans.*, (B) **185** : 663-717, pls. 60-63.

"Further evidences of the skeleton in *Deuterosaurus* and *Rhopalodon* from the Permian rocks of Russia".

These two Dinocephalians have strong resemblances to South African genera, so that in this series of papers Seeley was clearing his own mind in preparation for a grand review of South African fossil reptiles, a review that was encompassed in Part IX of the series, which was split into six sections and constitutes a great contribution to the basic knowledge and classification of the fauna.

It is quite remarkable that among the many official calls upon his time and his self-imposed regime of lecturing, he should have been able to produce this important work. These papers need perhaps only be listed here :

Section 1. *Phil. Trans.*, (B) **185** : 987-1018, pl. 88.

"On the *Therosuchia*".

Section 2. (1894) *Phil. Trans.*, (B) **185** : 1019-1028, pl. 89.

"The reputed mammals from the Karroo formation of Cape Colony".

Section 3. (1894) *Phil. Trans.*, (B) 185 : 1029-1041, pl. 89.

“ On *Diademodon* ”.

Section 4. (1895) *Phil. Trans.*, (B) 186 : 1-57, pls. 1, 2.

“ On the Gomphodontia ”.

Section 5. (1895) *Phil. Trans.*, (B) 186 : 59-148, 34 figs.

“ On the skeleton in new Cynodontia from the Karroo rocks ”.

Section 6. (1895) *Phil. Trans.*, (B) 186 : 149-162, 4 figs.

“ Associated remains of two small skeletons from Klipfontein, Fraserberg ”.

These were *Theromus* and *Herpetochirus* both now regarded, somewhat uncertainly, as Bauriamorph reptiles.

This important series of papers thus ended in 1895. Seeley's own specimens were received in the British Museum (Palaeontological Department) from 1892 onwards, being presented by the Council of the Royal Society.

Seeley's researches on reptiles, old and new, still continued and the pages of the *Geological Magazine*, the *Quarterly Journal of the Geological Society* and the *Annals and Magazine of Natural History* all bear testimony to his industry. Still the reptiles of South Africa claimed most of his attention but in 1901 he produced *Dragons of the Air*, an account of the flying reptiles, which, though now out of print, is still a standard work on the subject that has never been replaced.

The *Geological Magazine* in June 1907 published a brief account of his work to which is appended a bibliography of his writings to that date. Alas, there was not much more that he could accomplish. A year later he was stricken with illness and gave his last lectures. He died on January 8th, 1909, after much suffering in his home at 2, Holland Park Court, London, W.

Honours came naturally to him in some number. He served several times on the Council of the Geological Society. He was Vice-President in the years 1900-1902. He received the Murchison Fund in 1875 and the Lyell Medal in 1885. In 1879 he was elected Fellow of the Royal Society. He was elected a Foreign Member of the Philadelphia Academy in 1878, of the Imperial Geological Institute of Vienna in 1880, of the Imperial Society of Naturalists of Moscow in 1889, and of the Senckenberg Natural History Society of Frankfurt in 1895. He became a Corresponding Member of the Imperial Academy of Sciences, St. Petersburg in 1902, and a Fellow of King's College, London, his own College, in 1905.

His works and specimens remain a living testimony to his memory and a fundamental contribution to the understanding of the evolution of the reptiles, particularly those of South Africa.

